

CHARLES HAYTER'S
New Treatise
ON COLOURS.
Second Edition. 6s. plain, & One Guinea Colours.

A NEW
PRACTICAL TREATISE
ON THE
THREE PRIMITIVE COLOURS,
ASSUMED AS
A PERFECT SYSTEM
OF
RUDIMENTAL INFORMATION;

Simplifying,

THEIR UNIVERSAL POWERS, IN REGULAR ORDER OF GRADATION, INTO
COLOURLESS DARKNESS WHEN EQUILATERALLY CONCENTRATED;

THEIR VARIATIONS FROM ONE COLOUR TO ANOTHER, BY
THEIR CIRCULAR COMMUNION;

THEIR EXPANSION BY THE POWER OF LIGHT;

AND THEIR EFFECTS UNDER THE UNITED INFLUENCE OF

Light and Shade.

With some Practical Rules for Reflections;

AND

SIR ISAAC NEWTON'S DISTRIBUTION OF THE COLOURS IN
THE RAINBOW.

BY CHARLES HAYTER, *Portrait Painter*;

Author of an Introduction to Perspective, Drawing, and Painting, Fourth Edition;
And Professor of Perspective to her late Royal Highness the Princess Charlotte of Saxe-Cobourg.

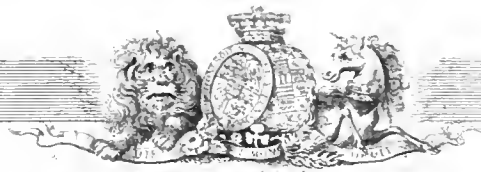
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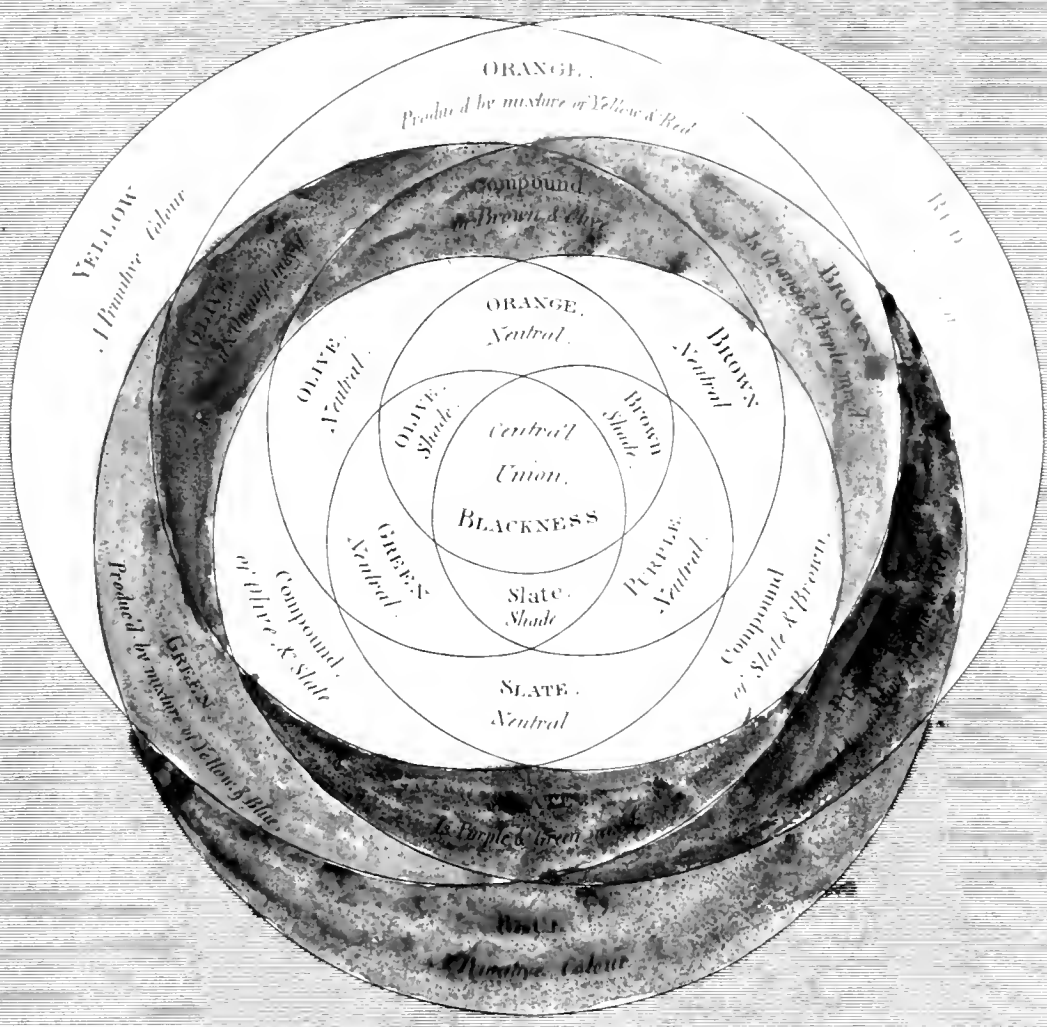
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HAYTER'S COMPENDIUM.

Exemplifying the Natural and unavoidable consequences of the equilateral Union by gradual and systematical concentration, of the Three Primitive Colours, according with Leonardo Da Vinci's proposition.



FRONTISPIECE.

In Mr. Rigaud's edition of Leonardo Da Vinci's "Treatise on Painting," chap. 226, we find the following suggestions:—

“ On the Mixture of Colours.

“ Although the mixture of colours may be extended to an infinite variety, almost impossible to be described, I will not omit touching slightly upon it; setting down at first a certain number of *simple* colours to serve as a foundation, and with each of these mixing one of the others—one with one, then two with two, and three with three; proceeding in this manner to the full mixture of all the colours together. I call those *simple* colours, which cannot be made or supplied by any mixture of other colours.”

The remarks which finish the paragraph, prove that he had not then completed a system on the subject, concluding by saying, “but I shall treat more at length of these mixtures in a separate work;” but no such work was ever published, nor (for any thing that appears) ever was written.—*See Rigaud's note.*

Had Leonardo Da Vinci given us a full Treatise on Colours, and explained the above introductory remarks by a *diagram* consonant with his compendious description, I cannot conceive that he would have designed one more clearly explanatory of his proposed system, than MY COMPENDIUM—the *Frontispiece* of this Essay.

TO THE READER.

That the UTILITY, along with the ORIGINALITY, of the following, may be the more readily known, I feel interested in pointing out that fair degree of value which *any improvement* to the branch of art for which it is offered, may entitle it to.

The antique diagram of three united equilateral triangles, as the basis (or datum) of that branch of science which treats on the formation of colours, *by the mixture of paints*, has hitherto stood at the head of all the treatises (that I know of) on the subject, perhaps through a due sense of its purity, or a doubt of the possibility of making any improvement over it without departing from its scientific simplicity: it exhibits the Three Primitive Colours, equilaterally blended where they intersect, forming by their triple union, in the central triangle, an abrupt change from each *parent* colour to blackness---see Plate 1, Fig 3. Now, *inasmuch as this diagram has been held valuable, insomuch* I presume to claim the same degree of preference over it which mathematics allows to TEN over FOUR---resting this bold but fair claim on Fig. 5 in the same plate, which I have named **ULTIMATUM**; because it contains all the colours that are distinguished by integral names, down to their final compound---*as perfectly*, as scientific, and with greater purity of formation, (being the involution of a single line), than the antique Fig. 3 of only four places! The gradual degradation of colour below the *nine of the* **ULTIMATUM**, is clearly evinced in the **FRONTISPIECE**. The **COMPACT SYSTEM** which I have been enabled by the above ORIGINAL DISCOVERY to offer to the Fine Arts, while it will prove that I have confined myself with strict care to the integrity of the subject, will, I hope, meet with *only as much attention* as it demands from all who make COLOURS, in *any department* of the use of them, an object of utility.---C. HAYTER.

↪ A SLAB for the mixture of Colours, according to Hayter's **ULTIMATE DIAGRAM**, is sold by Charles Smith, at his Universal Colour Shop, 34, Mary-le-bone Street, Piccadilly, next door *west* of the back of the County Fire Office.

P R E F A C E.

In the prefatory part of a book, the Author endeavours to make his own case as favourable as he can, anticipating critical objections, and answering them as he thinks most to his own advantage; leaving the *simple fact*, to decide on the real utility of the work, *opinion* only affecting *opinion*; and is more frequently moved by the will than by deliberate and impartial conclusions: for—

Those convinc'd against their will,
Are of the same opinion still.

The following rudimental work being founded on indisputable truths, familiar to *those* who have a thorough knowledge of the subject on which it treats, I need not doubt of some approbation from (at least) as many of them as desire that *every one of the steps* which lead to useful knowledge should be made as plain and clear as possible, to facilitate the arduous work of study, especially when genius supports the propensity. The most eminent in the various branches of arts and sciences, are the most proper *special jurors* on subjects which lie in their several departments; and it is a duty they owe to learning, and to community, to investigate watchfully and attentively the advance of *new* propositions; to prevent the promulgation of error on the one part, and to countenance with their public approbation whatever may prove to be on

the favorable side of science. It is their province to preside over those mechanical operations that receive their laws from learning; and the workman who best understands those laws, will find his success equivalent with his knowledge. The scholarship requisite to such desiderata is too often above his reach; and thus it is that genius flounders about, without that rudimental aid which might lead him in the simple path of system.

With the conviction of this truth, I have devoted most of my spare time to the simplification of such parts of the arts and sciences as appertained to my profession, in which my success has far outgone my most sanguine expectations.

The general approbation which my "*Introduction to Perspective, Drawing, and Painting,*" has received, emboldens me to offer the following Practical Explanation of THE NATURAL Relationship of Colours (which from all that I have seen by other authors, on the same subject, was still wanting to distinguish between the practical properties of such *materials* as give their *colours in substances*, suitable to the purposes of art; and the *transient effects of LIGHT*, which must not be considered as belonging to the system of *mixing colours for the purpose of painting*, notwithstanding that the very end and sole purpose of such system is to obtain the proper means for imitating all effects of colouring whatsoever, of which LIGHT, in all its gradations of influence, must be considered as the sole cause. Yet I deem it reasonable to treat, first and separately, on the properties of the *painting materials*, as to *colour only*, that the student may be provided *with means* to ascend to the application of them; preparatory to which, I deem the following observations worthy notice. Most youthful votaries for

the *Fine Arts* evince more zeal than discretion in their pursuit of them; and great are the errors which *self-teachers* in particular fall into, through that impatience and want of proper thought which is too often the attendant on inexperience, who, like unprovided travellers, wear out their energies in obligatory returns for indispensable necessities, until habituated to their blundering precipitancy and its dilatory and laborious consequence, they most probably relinquish the wished-for accomplishment with mortification and disappointment, unless the ridiculous consolation urges them on to mistake motion for progression, or to calculate the quantity of their merit by that of their labour; like the wagerer, who undertakes (within a stated time) to pick up a hundred stones laid a yard apart, one at a time, returning to the starting-place with each stone before he starts for the next, going nearly *eight times* the length of ground necessary for collecting them, and all for the vain purpose of throwing away manual dexterity unworthily, or the pernicious gain of gambling, to which no honour can ever be allowed.

Talent is too great a gift of Providence to be fooled away on uselessness, and especially to be the tool of vain ambition. The only successful grounds for talent to ripen on is, by cultivating acquaintance with all such mathematical aid as can be applied to its service. No opinion or argument can move or alter mathematical demonstrations: they dictate perfect laws—they require no art of rhetoric to confirm them—none dare attempt the confutation of *WHAT IS*, and is proved, and known to be nothing else but *what it is*. Truth is its sublime *standard*, and all true philosophers rally round it; therefore to whatever degree of subordination the *Fine Arts* can be

brought by mathematical data, obedience is indispensable for the most certain means of improving their systems ; and as Painting and Music are allied, *the simple rudiments of each, when scientifically advanced*, should be *deliberately* acquired, before the charms of maturity can be advantageously digested. The melody of *Music* inspires universal adoration, Shakspeare having expelled from the sphere of humanity all such *as love it not* ; and numerous are the votaries of fame in the practice of those ingenious arts by which music is rendered audible ; supposing that accomplishment to be attainable by an instrument and a book of instructions, which, is granted to be a very judicious preliminary, if a deliberate and studious attention to the *instructive* introductory parts could have sufficient investigation, before the *tunes* which generally follow such instructions for early exercise, were attempted ; but no sooner has the learner discovered, by the *scale of notes* how to read a plain tune, and to produce the sound of any particular note by proper application of the fingers, than away he skips to the commencement of some favourite air, turning backwards and forwards from *tune* to *scale*, and again to *tune* (like the stone-picker), till at length (with a previous knowledge of the air) he renders his labours intelligibly to mean “ *God save the King.*”—So far it might not be amiss, if the learner could rest content with the delicious sweets thus pledged to his fond hopes, and would return to the rudiments, and collect more substantial means for proceeding, before the habits of precipitancy become incurable, and the chance of accomplishment more than doubtful ; and most materially so, through having a tolerable ear ; because, whatever we already possess renders us seemingly independent of foreign aid, in that particular at least, and often blinds us to our real wants ; but

it should be considered, that even the owner of a gold-mine cannot avail himself of his possession without great and laborious assistance; so—

Some there are who have a store of wit,
But want as much again to govern it—

before those exquisitely graceful modulations—expression and harmony—which should characterise the performance, can be acquired.

The above is a parallel case with the proceedings of too many fond aspirants to the favours of the PAINTING Muse, which Sir Joshua Reynolds has said is not *a legerdemain art*. Yet the possession of a few materials, such as pencils, Indian ink, and a box of superfine water-colours, &c. emboldens too many emulous endeavourers after “*cleverness*” to evince but little faith in Sir Joshua’s declaration, who dash on, determined to perform a wonder, and astonish science by the triumph of INTUITIVE genius. Others, awed by the authority of so high a master, determine to spare no pains, but do the work as well as *they can*; when, the best “THEY CAN” while they keep the book of rudimental instruction shut, and neglect the means of discovering *how much better* than *they can* it might be done, will leave nothing but their labour for their reward; and woe be to all future improvement, if by dint of *laborious perseverance* the work should be pronounced “*clever*,” unless that encouraging circumstance should lead them to a *regular* system of study, by which alone excellence is attainable.

Practice and experience, assisted by the Treatises already extant, having established a general knowledge of the natural effects producible by the mixture of colours *with the few who*

have thus acquired it, it cannot be asking an unreasonable favour of them to look over my system attentively, and then look back to the period of their first inquiry on the subject, when I must hope, that they will not only find the *originality*, but the utility, of my new rudimental diagrams—the *Ultimatum*, the *Frontispiece*, and my *Equilateral Union of the three Circles*. The last-named figure I designed for a small rudimental book in 1810, and have repeated it through my four editions on “*Perspective, Drawing, and Painting,*” WHEREIN it must be granted, that the principles on which my “*Painter’s Compasses*” are *here* enlarged on, were thoroughly formed in my mind in the year 1813, the date of my first edition, as clearly evinced by my diagrams (Plate 14) and explanations (Letter XVI) of that book; when a work by Moses Harris (WHICH I HAD NEVER BEFORE SEEN OR HEARD OF) was brought to me, to dash my claim to the originality of my diagrams. But although we have accidentally thought somewhat alike, with regard to the method of displaying the circular union and expansion of colours, and granting him upon my own principles to be *so far* right, I still found, and (my book being then published) must confess, that at the time I felt no undue degree of triumph over my proffered antagonist, which I presume is fairly maintained by comparing the rudimental centre of his circular display, with *the root* of my first “*Painter’s Compass,*” my *Ultimatum*, and *the Frontispiece*; and had I not fully succeeded in thus finding a clearer and more explanatory *root* to this branch of science than has yet appeared, I should not have found matter sufficiently important to the arts, to have offered a new simplification on the subject.

ON COLOUR.

All that can convey the evidence of colour to the sight, is producible by three materials, which are most properly termed THE THREE PRIMITIVE COLOURS: they are—*Yellow, Red, and Blue.*

This absolute triumvirate, appointed by the Supreme Power of LIGHT, extends its dominions throughout the utmost boundaries of visible matter, each separately governing its own integral province with positive ascendancy, while each to each communicate their influence in perfect concord and harmony, filling their whole region with a succession of beautiful variety conformable to the varying dictates of *light*. Indefinite as this general description of colours may seem, enough of their constitutions will be shewn to enable the student to obtain a practical acquaintance with their fundamental laws, as preliminaries to a knowledge of their powers, coincident with the scientific conclusions of the most learned investigators on the subject of transient colours; which, although irrelevant to my declared proposition *in this stage* of the work, must be considered as the final aim of it; for the sole use of the knowledge of mixing and forming colours, must be to enable the artist to imitate the transient (or apparent) colours of matter, as well as local, or he will find it but a dormant acquisition; therefore the greater the genius, the more indispensably necessary it is that he should add to his knowledge of permanent colours, all that has been discovered of transient from the works of Sir I. Newton, Dr Young, etc.

PERMANENT COLOURS.

In treating on the three materials which are to be used as the Three Primitive Colours, the most perfect of each is to be understood, both as to colour as well as quality; but as *colour only* is my present theme, I leave the other desirable qualities of the material unnoticed, and in my exemplifications shall confine myself to the use of but three:—*Yellow-Gamboge*, *Red-Lake*, and *Prussian-Blue*, for the sake of consistency, to prove the certainty of the system under the following

AXIOMS.

First—That Yellow, Red, and Blue, are entire colours of themselves, and cannot be produced by the mixture of any other colours.—*See Plate I.*

Secondly—Yellow, Red, and Blue, contain the sole properties of producing all other colours whatsoever, as to colour, by mixtures arising entirely among themselves, without the aid of a fourth;—

Thirdly—Because, by mixing proper portions of the Three Primitives together, *Black* is obtained, providing for every possible degree of shadow.

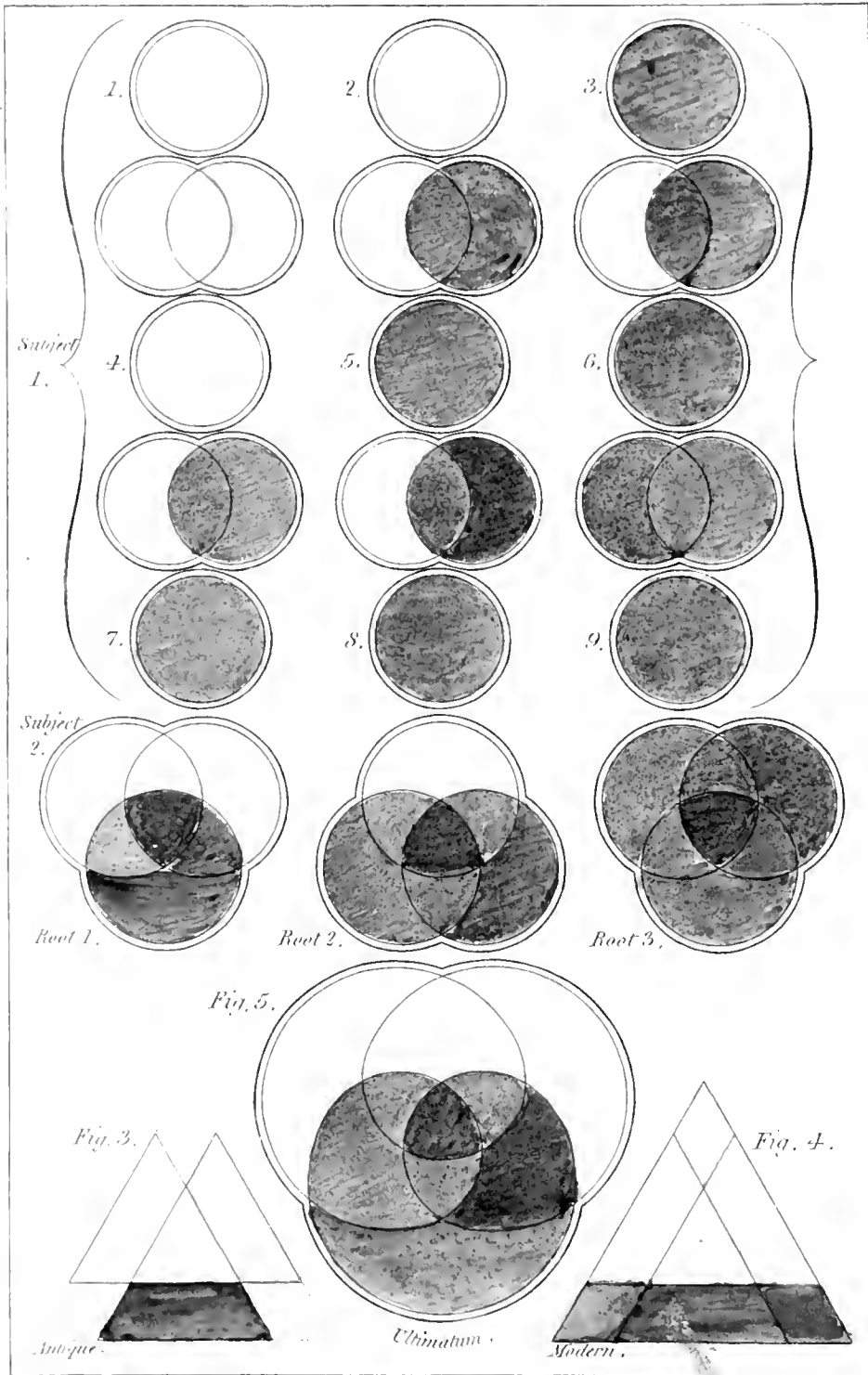
Fourthly—And every practical degree of *light* is obtained by diluting any of the colours, as above producible; or in oil-painting, by the mixture of white paint.

Fifthly—All transient or prismatic effects can be imitated with the Three Primitive Colours, as permanently considered, but only in the same degree of comparison as white bears to LIGHT.

Sixthly—There are no other materials, in which colour is found, that are possessed of any of the foregoing perfections.

These Axioms form the basis of the following explanations, establishing a simple, clear, and permanent system, according to the nature and powers of the materials.

PLATE 1.



Inasmuch as a gamut is not any distinct tune of itself, so a chromatic scale of colours is not any distinguishable picture; yet so perfectly do each develope that systematical order by which nature has determined harmony, that, without them, Painting with regard to colours, as well as Music with regard to sounds, would remain to all, as they still do to all those who are unacquainted with them. The student of the following diagrams must, therefore, wait patiently and attentively for the *fruits* which *these roots* will certainly produce, if duly cultivated.

PLATE I.

The *first Subject* of this Plate shows the *Three Primitives*, and their six principal descendants, in so clear a manner, that they may be understood at sight. These *nine colours* are all which are distinguished by integral names; nor are there any other colours sufficiently qualified by their difference from them to bear a part in the formation of a *rudimental* scale.

SUBJECT 3.

N ^o	{	1. Yellow	}	<i>Primitive</i>	{	take the first station as the sole progenitors of every tincture that can convey any idea of the term colour; beginning their systematical increase according to the evidences of the second row, where
	{	2. Red	}	<i>Colours,</i>	{	
	{	3. Blue	}		{	

Yellow with Red produce *Orange* by simple union ; and in like manner Yellow and Blue produce *Green*, and Red with Blue form *Purple* : thus are obtained —

N^o { 4. Orange } These are naturally the first productions
 { 5. Green } of the *parent colours*, taking their proper
 { 6. Purple } stations as exemplified by the third row,
 and are then denominated *colours*, as to every intent and purpose of painting. The fourth row, like the second, shows the means by which the third class of compounds are produced,
 N^o { 7. Olive } and brought under the denomination of
 { 8. Brown } *colours*, as practical materials, according
 { 9. Slate } to their stations in the fifth row, completing the nine principal materials for the use of painting.

With regard to the order in which I have named the Three Primitives, I have conformed to the natural gradations of transient colour, wherein *Yellow* is found nearest to LIGHT, *Red* the MEDIUM, and *Blue* graduating towards DARKNESS, without any further consideration on the effects of transient colours at present ; as the design of the *first* Subject is to exhibit the natural origin of the whole system.

The *second Subject* will be better explained after my observations on the third and fourth diagrams of Plate I.

FIGURE 3.

This beautiful union of three equilateral triangles, is well adapted to show the relative balance of the three primitive colours, and the effect of their palpable mixtures by triple union ; forming a mathematical evidence of the truth of the third Axiom (page 12), the *fourth*, or general *shading material*, being the natural consequence of their intersections.

Of its date of origin, or author, I am not qualified to speak; but believe it to be the most ancient diagram for the purpose to which it is applied, as it perfectly corresponds with the opinion, that the ancient painters produced all their effects of colour by the use of *only four*, and, for ought I know, may be the best authority for such opinion. Be this as it may, time and experience have proved, that they might have performed whatsoever colours are capable of, with Three purely Primitive Colours, and their triple or first mutual compound for the purpose of shading, with the use of dilutents, in the transparent manner, on a perfectly white ground: but if they painted in *embodied colours*, as oil-painting is at present performed, I would contradict Apelles himself, if he declared that he did not use a *fifth* material, namely, *white paint*; but that the eminent painters of antiquity perfectly did understand the full extent of the powers of the Three Parent Colours, we must not doubt, without concluding that the accounts we have of their marvellous productions are fabulous. (*See Anecdotes of Ancient Painters.*) Whatever of their excellencies may be lost to the moderns enough has been restored since DA VINCI gave them his knowledge, and TITIAN his examples, to render such loss endurable, leaving ancient mysteries to the retired date of antiquity, and the prejudice of curiosity.

FIGURE 4.

Although I know not the date of the diagram, I have ventured to name it *modern*, because it deviates in its evidence from the doctrine of “the four colours of the ancients,” exhibiting *six*, without allusion to the final compound of the Three Primitives, leaving the artist to invent a shading material, un-

less the *compound form* of uniting the central triangle to each of the three slips of colour be supposed to have been the intention of its author; but the science will not allow it.

That a more simple, more perfect, and therefore a more scientific display of the gradual multiplication of tints, by means of systematical mixture, was wanting, is evident by the several ingenious publications which have been offered on the subject of colours; but these “rich stores of information” require “as many more to render them intelligible” to the *unlearned* mixers of colours, chiefly by the display of prismatic and other experience; much of which must in *my* opinion be declared irrelevant to the primary information proper for the right knowledge of *permanent* colours. And it is here I claim the preference over Figs. 3 and 4, as *roots* of the system, and offer my own considerations on the subject, which I advance with due confidence, as a *rudimental* improvement on the methods heretofore attempted for the elucidation of colours.

SUBJECT 2. ROOT 1.

In this diagram, the equilateral intersection of three equal circles form seven places, and the colouring each *whole* circle with one of the Primitive Colours, produces the natural consequence of bringing forth Orange, Green, and Purple, strictly conformable to the general display of them in the *first Subject* of this plate, and by their mutual union in the centre produces the same compound of Black as the antique diagram, Fig. 3.

Root 2. makes Orange, Green, and Purple, its principal colours: as the Three Primitives were to Root 1. the combinations of Root 2. bring forth Olive, Brown, and Slate: they in due order govern Root 3. whose compounds descend as

low in the distinguishable variation of colours, as the subject requires.

On gaining this clear step in advance, by the application of so simple and *common** a *diagram*, I rested satisfied, till the publication of my *fourth* edition on Perspective, &c. ; which I attribute to owing all the scientific knowledge of colours which I *then* had, to the *prismatic* system ; which, however indispensably necessary to be understood for the right use of colours, as knowing LIGHT to be their sole cause, should *follow* the art of *providing* the colours. Now, finding by the chromaties (Subject 1), Olive, Brown, and Slate, to be properly recognizable as the third class of permanent colours, a *new scale* of three more places became requisite ; and I hope I shall not be thought too vain in giving it a *superlative title*, because all the mixtures, which would descend from and by means of Olive, Brown, and Slate, must not only have compound names, but their colours would be so entirely neutralized, as to render them of no *rudimental* value.

Ultimatum.

Fig. 5. By this Figure, I have established a perfect exemplification of my proposition, showing the relative dependance of every colour on its predecessors, produced by unavoidable union according with their equilateral intersections, finally concentrating into colourless shade.

THE FRONTISPIECE

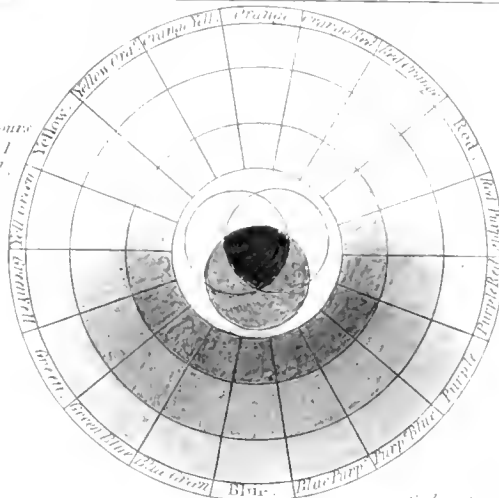
Was designed—*first*, to evince the *inutility* of recognising

* Being to be found on the dining-tables and barn-doors, &c. of rustics, marked by a fork or a prong, which I presume cannot lower the value of the use I have made of it.

any compound below the *third class* of colours (see Root 3. Plate 1.); *secondly*, as a key to the method of mixing them, to those who may be desirous of an experimental proof of my conclusions; and, *thirdly*, as I believe the intervolutions of the line which forms *my* ULTIMATUM to be *entirely new*, both in its formation and purpose, and seeing how seldom *utility* and *novelty* unite together, I considered it worthy of the study to design the *Frontispiece*, with an elaborate *increase* of gradations between the Three Primeval Colours, and their final neutralization by their equilateral union, as *a compendious datum of the system*; and as a figure having some claim to the notice of geometers, being (like the *Ultimatum*) formed by the intervolutions of a *single line*.

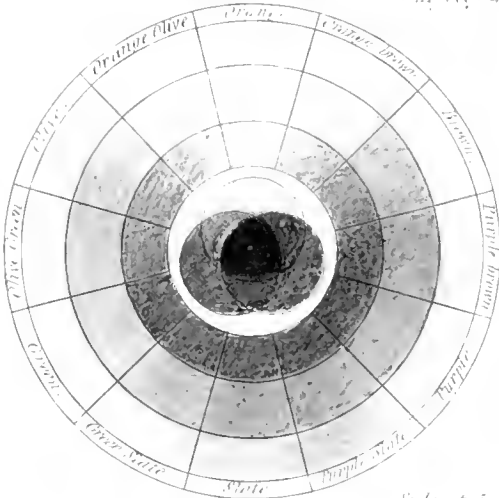
Having thus set the basis of a clear system on a solid foundation—as far as regards the manner by which colours pass *into SHADE*, by the natural degradation which is the unavoidable consequence of their equilateral connexions, in their descent from their Primæval Progenitors, down to their triple concentration—the three following diagrams (Plate 2.) which I have thought proper to name “THE PAINTER’S COMPASS,” will explain the order of their expansion towards LIGHT, and their mutual dependance on each other for the formation of the various degrees of colour which arise out of their circular communion; while the subdivisive radii show the gradual ascent of each colour and intermediate compound into LIGHT, evincing by rational inference, the certainty of each being capable of the most subtle gradation; until LIGHT would dissolve all perceptibility of colour, according to the whiteness of the surface on which they are used, or the material with which they are mixed for the experiment—which must be understood to be the whitest of *white paint*.

Expansion of colours
according to Root 1
Subject 2 Plate 1.



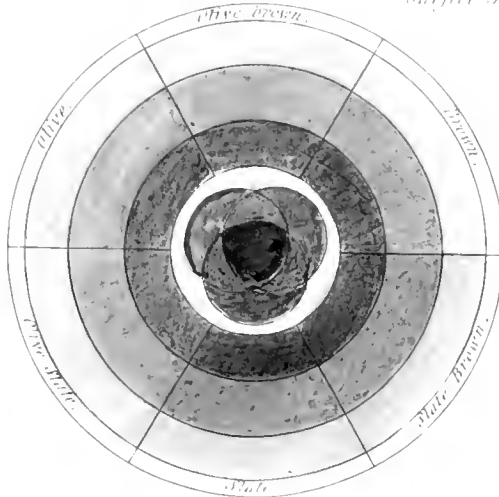
Subject 4.

According to
Root 2 Plate 1

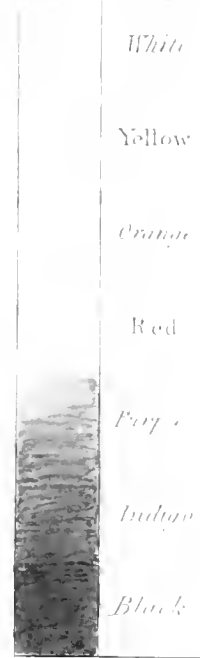


Subject 5.

According to
Root 3 Plate 1



WARM EFFECT.



COLD EFFECT.



The principles of colour are the same, and will produce equal effect in both the methods of colouring; which may be clearly proved by making a perfect copy of an oil-painting with *water-colours*, or a perfect copy of a water-colour picture with *oil-colours*; both of which can be effected, as far as the tincture which *oil* (gives to every colour from white through the whole class of cold colours) will admit of.

PLATE II.

THE PAINTER'S COMPASS.

The Three Primitive Colours here form the central datum of the first compass, according with Root 1. Plate 1. which is the governing principle, and without which the *completion* of the compass must depend on the consequence of proceeding; while the "*root*" *determines*, and directs, the arrangement of every colour in the circle; leaving nothing to chance or conventional contrivance, as each arises in its own and only proper station.

The number of circular divisions may be considered as allusive to *infinite*, by imperceptible gradation between full colour and its total evaporation into light; which I presume is sufficiently intimated by the systematical gradation of three distinguishable variations of strength as to colour, as I have offered them in this diagram by the three circular spaces. The rule which Sir Joshua Reynolds has given, in his 41st note on "Du

Fresnoy's Art of Painting," is as follows:—"The predominant colours of the picture ought to be of a warm, mellow kind. Red or Yellow, and no more cold colour, should be introduced, than will be just enough to serve as a ground, or foil, to set off and give value to the mellow colours, and should never of itself be principal."

Whether he arrived at this knowledge by a scientific investigation of the operations of light on matter as found in NATURE, or by studying the works of *her* most successful imitators, is not a subject of my inquiry. HE WAS RIGHT; and I cannot withhold the suggestion, that it surely would have been a weighty confirmation of his conclusions, to have accompanied them with the mathematical demonstration, which is conveyed by the natural combination of the Three Primitive Colours (see Plate 2.), as the infallible consequence of their triple union, by showing their harmony, sympathy, and antipathies, all in incontrovertible order; and although Blue has such a powerful influence in its communion with the Yellow and Red, as to determine the character of "cold" on that *half* of the compass in which it is placed, still the mellifluous influence of Yellow into Green on one side, and the Red into Purple on the other, preserves the equilateral balance strictly consonant with Sir Joshua's annotation.

Picture, properly so termed, combines a natural proportion of light, shade, and reflection, on judiciously-chosen local colours, which, if properly proportioned in each requisite, and in *natural* order, gives harmony, and conveys so true an effect of the subject, that nature will appear to have adopted the work as her own: none but the genius who is refined by a scientific acquaintance with the system which governs so merito-

rious a work, can comprehend, nor is even aware of the art required to unite enough of all the component parts for a naturally whole effect, strictly conformable to the light adopted. It should be understood, that nature, in all her formations and effects, exhibits nothing else but *colour* ; at least, inasmuch as the effect of light, shade, reflection, and local colours, on the various objects of imitation, are considered ; for then *all these* come under the denomination of *colour* or *colouring*, every conceivable and perceivable tint or gradation of which, may be obtained by proper application of the means offered by the system comprehended in this Plate, showing the student how to provide proper materials for the possible representation of all effects of colour.

Although appearances are rendered such, by *that* incomprehensible and inimitable power, LIGHT, which has such ascendancy over the appearance of all matter in its *extreme* effects, as to annihilate all idea of colour by its overpowering influence, whilst the *total* absence of its power is productive of the like effect by the *opposite* extreme, enveloping in *invisible* darkness all that which, in the vivifying *medium* of its power, diversifies a scene with all the variety and beauty that colours *can* display.

THE SECOND COMPASS.

According to Root 2. This diagram holds Orange, Green, and Purple, as principal ; having Olive, Brown, and Slate, as their natural intermediates. The principles and intention of the three circular gradations having been already explained, I have here considered one space between each colour enough to show the systematical order of their circular communion, clearly inti-

mating the means for more subtle gradations by the preceding compass; as the equal mixture of the colours of any two adjoining subdivisions will produce the colour that should lie between them.

THE THIRD COMPASS,

According to Root 3.—Here Olive, Brown, and Slate colours, form the central datum, and, like their predecessors, become the chiefs of *their* region. The compounds which are produced by their circular communion, are not sufficiently distinguishable from their humble progenitors, to require, or indeed admit of, more subdivisional radii; nor of descending by any intermediate tint between them and total shade; for were we to make the compounds which are produced by Root 3. the principals of a *fourth* compass, the whole would blend into indistinct dark neutrality; which, finally united, *Blackness* is the result, as already appears in either Root of the Compasses. And that nature might dictate the progress of science, and prove it always to be consistent with itself, this final compound becomes a most important material: it is the legitimate *shading colour*; and *I* consider it to be as deserving the name of colour among colours (*as painting materials*), as any in the system; and, to all intents and purposes of painting, as requisite; possessing the properties of infinite variety on the *descent* of colours, as light governs their ascent. The following Plate exhibits the simple effects of its usefulness, by six gradations of shade on each of the Nine Colours.

Subject 1.

PLATE 3.

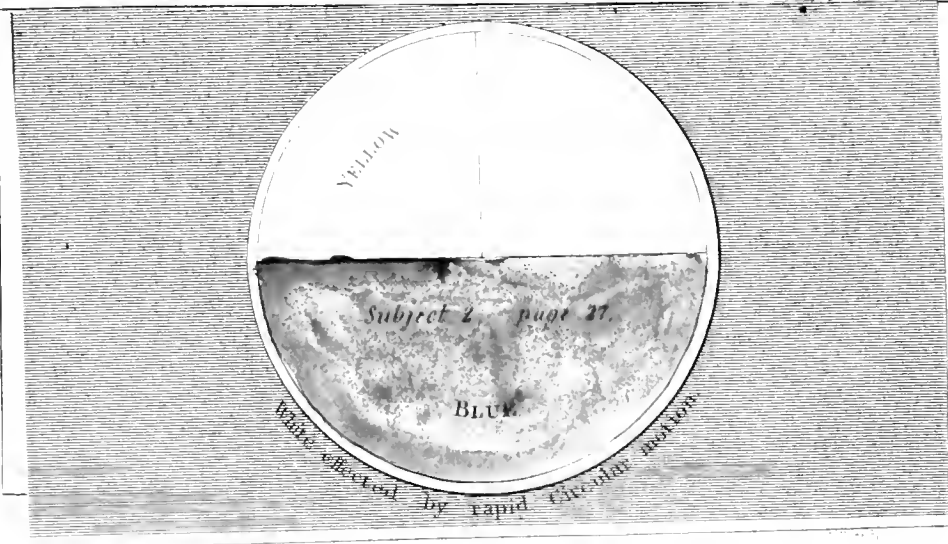
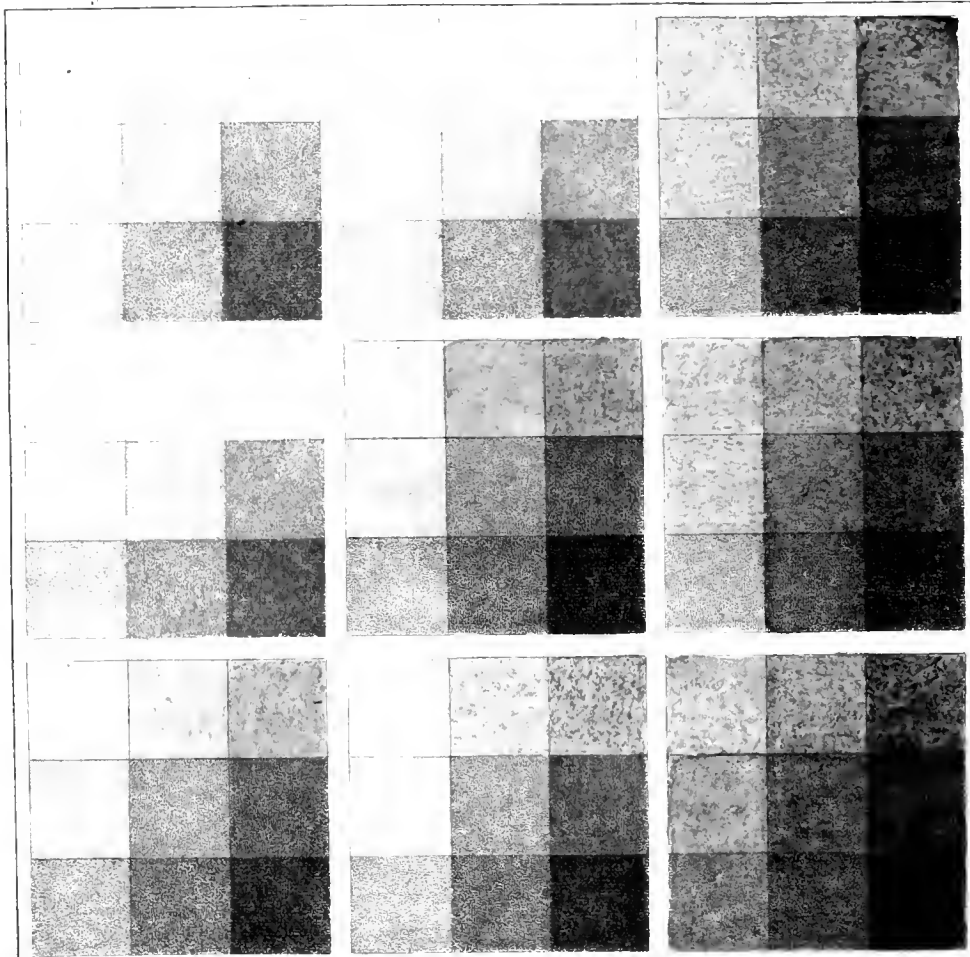


PLATE III.

SUBJECT 1.

Shows, three degrees of each of the Nine Colours of the system, as affected by various degrees of shade, expressing the simple effects of the absence of light, and proving that the increase of shade, when unaffected by reflection, does not increase or change local colour. The three top spaces being each pure colour of three different degrees of strength, are carried down without alteration of colour through the two rows below; the whole variation of appearance being obtained by the different degrees of darkness.

SUBJECT 2.

Follow the example explained by this diagram, and light is effected.

LAWS OF LIGHT, SHADOW, AND REFLECTIONS.

1. Reflecting surfaces tincture the objects reflected on with their colour, proportionately with their distance from each other, and the angle under which light operates.
2. The general prevailing colour of light tinctures every object within its influence; for instance, observe the whole hemisphere at the time of a warm sun-setting, a cloudy sky, or a fog.
3. The power of light, particularly sunshine, increases the warmth, and weakens the local colours, of all the cold class of colours, which are, *Blue*, *Green*, and *Purple*; for instance, Grass, which in shade appears a cool refreshing *Green*, will appear almost *Yellow* in sunshine.

4. The *warmth* of parts, or breadths, which lie under a partial degree of shade, where the power of lights from surrounding matter prevails, is accounted for by the quantity of such secondary light, and their local colours.

5. When a white surface *reflects* on the *shadowy* part of any colour, it looks *paler* than the *lighted* parts of such colour; but the power of the shadow holds it inferior with regard to light.

6. Glossy surfaces receive the form and colour of all objects locally, according to their purity, and reflects them accordingly.

7. Every colour that is reflected on by its own colour, is enriched thereby; according to the strength of light on the reflector.

8. Every colour that is reflected on by its directly opposite colour, will be neutralized thereby; such as, *Green* against *Red*, *Blue* against *Orange*, or *Purple* against *Yellow*, in an equivalent degree with the power of light.

9. If any two approximate colours (see Painter's Compass) reflect the one on the other, its tincture will approach the appearance of that compound which the two colours would make by mixing them.

10. The direct opposite to any one of the Primitive Colours, is an equal compound of the other two.

11. The middle colour, or medium, in a warm effect, is *Red*. (See warm effect, Subject 4, Plate 2.)

12. The middle colour, or medium, between light and darkness, in the gradations of a cold effect, is *Green*. (See Subject 5. Plate 2.)

13. Whatever be the colour of a flat surface, when the visual ray forms a perpendicular line to it, and when fairly lit, must be painted of that colour; when unaffected by glittering, or reflections, regarding duly the influence of distance and aërial medium.

14. The *certain* colours of all visible matter must give place to their appearances, owing to the compound influences of *light*, shade, *reflection*, *clearness*, or *density of atmosphere*, variety of distances, and *the prevailing colour of the sky*, or *any other prevailing* medium.

Note—The above explanations being beyond the bounds of "*my original proposition*," I am led by the help of Sir Isaac Newton to take one essential step further, enabling young artists to treat that beautiful phenomenon, the *Rainbow*, with consistency; according to any instance of its appearance, or any scale of size the picture may be determined to be, which will be the subject of the following diagrams, and their explanations.

FIG. 1

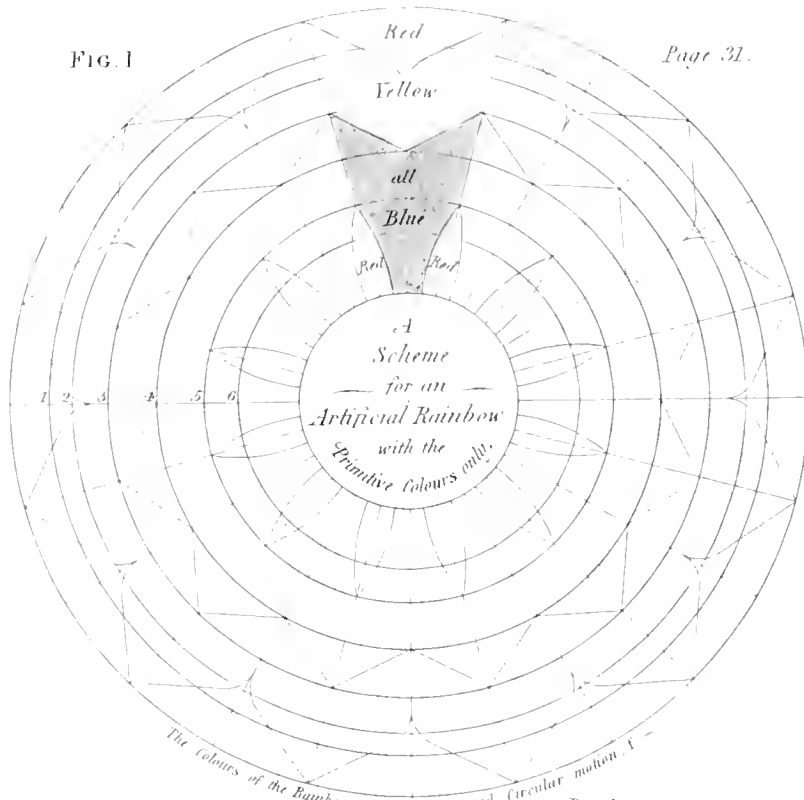


FIG 2

Sir Isaac Newton's Rainbow

45 Parts	27	18	60	60	40	80
Red	Orange	Yellow	Green	Blue	Indigo	Violet

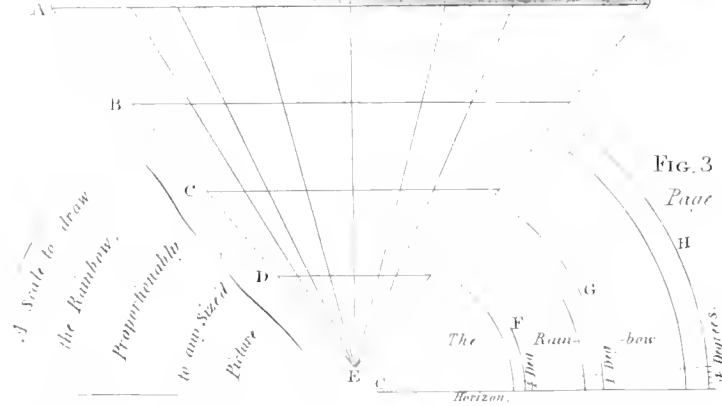


FIG. 3

PLATE IV.



THE RAINBOW.

The first example in this Plate being for leisurely experiment, Figs. 2. and 3. claim prior attention. In Fig. 2. I have taken Sir Isaac Newton's distribution of the colours for granted; it shows that the space appointed for Red, is to graduate from Crimson to the first tint of Orange colour; the Orange on to Yellow, until it unites imperceptibly with the deepest tint of Yellow; then soften off the Yellow, till it meets and unites with the palest tint of Green. At this point of the bow, colour is scarcely perceivable that the highest light may be effected—the Green must then tenderly increase in colour and Blueness, so as to join Blue imperceptibly; Blue must then graduate on to Indigo, and Indigo into Violet, finishing with the deepest tint of Violet. The *converging scale* below the divisions of the bow will enable the student to draw it proportionably to a picture of any dimensions—as thus: first, determine (by Fig. 3) on the *width* of the bow, which is governed by the arch it forms, being somewhat less than four degrees of such arch, and the distance of the *second* bow above the rainbow not quite 9 degrees: its colours are reverse of those in the first bow. Now mark on the edge of a card the determined width of the bow, then apply it parallel to the line A, to that part of the scale (Fig. 2) which tallies with the measure on your card, as at A, B, C, or D, or any intermediate space between those given measures, and mark on it all the divisional lines of the colours; and should a greater width of bow be required than the length of the line, A, in the scale, continue the divisional lines which diverge from E, upwards, so as to obtain any width

of Bow required; then apply your tally (the marked card) to the foot of your proposed bow in the picture, and set the divisions off carefully, and colour accordingly, of course, agreeably with the power you intend it shall assume in the picture.

The Rainbow will only represent a *half circle* at the instant of sun-setting, and at all other times the bow will be elliptical, with its longest diameter parallel with the horizon, most so, when the sun is as high as it can be to exhibit *any* Rainbow at all, which is, when the sun is not above 40 degrees high. The various degrees of the bow's elliptical appearance can be geometrically ascertained, by finding how far below the horizon its centre is, which is the same number of degrees as the sun is above it: consequently, throwing the uppermost part of the bow back out of a vertical position, subject to the laws of perspective.

Figure 1, Plate 4, gives the colours of the Rainbow artificially, by properly disposing the three primitive colours, as follows:—first, draw as large a circle as your tablet will allow, and a smaller one within it the space between these two circles is to express the width of the bow; then apply to the scale (Fig. 2.) and strike circles at each sub-division, as at 1, 2, 3, 4, 5, 6; then draw the 24 radii by equal divisions of the circle, and mark the zig-zag lines according to the example. Colour each partition which they form (all round) with an even lay of colour, the outermost with Red, the next all Yellow, and the next home to the inner circle, all Blue; then colour the narrow slips with Red. When you have drawn the diagram in pencil, rub it with crumb of bread till your guiding lines are *but perceivable*, and when the colouring is finished rub them out entirely, or the marks will lower the colours; then cut out the part you have coloured, and paste it on a dark cloud-coloured pasteboard, and make the experiment proposed according to your own ingenuity and convenience.

Directions for colouring the Plates.

Whoever is desirous of attaining a practical knowledge of the foregoing system, *should draw the diagrams, and colour them* with studious attention; and notwithstanding my confidence in having explained the whole to common capacity, I should be wanting in candour (to *professional* students of colours), were I to hold out the delusion—that to read it and understand it, would be sufficient, except to those who only study for the accomplishment of amateurs.

Practice is one of the great means of perfection: for when we find ourselves earnestly engaged in the *performance* of a work, the faculties are awakened to all that appertains to it, thoughts and conclusions arise, which perhaps would never have occurred, some of which may lead on to others of infinite value to the arts and sciences. It will instantly appear, that the following directions are for such as are unacquainted with the use of colours, and are offered in the plainest manner, to induce the practice which I so earnestly recommend.

The Three Primitive Colours determine for themselves, being each of their proper colour without any mixture; but as they may be varied in the *depth* of their colours, according to the quantity used on a given space, you must take care to avoid both paleness and darkness, so as to satisfy your eye that each is perfectly the colour it is named to be. YELLOW must be neither more nor less than Perfectly Yellow, which, in using Gumboge, will require care, because its *full depth* is

nearly an Orange colour ; and wherever it is to mix with any other colour, it is advisable to use it *last*, by laying it on the colour you would mix with it, as it is rather an unso- ciable material, and acts best *by itself*.

The Red Lake requires enough of Yellowness to be added to overcome its Pink effect, so as to produce a *Scarlet* tint, which is the *true Red*; and its *proper depth* of colour must be feelingly attended to; and so of all colours, when considered as the standard colour of its name, which is when they are the true medium between light and dark colour.

The proper depth of the Prussian Blue, is all the attention the BLUE requires: thus you are provided with the first three colours of Plate I. which are these, to be used invariably of the same depth, as also throughout the work wherever they are named.

The second row of Plate I. is the clearest and most simple evidence of the means by which the third row (or second of colours) is produced, that I could devise — the intersections by couplets bringing forth Orange, Green, and Purple, in their proper colours: as they are to be set up, and *held invariably*, they make the *second* class of colours. Now, although each of *these* are made by mixture of other colours, they must be so perfectly balanced by the eye, as to produce no idea of either of the two colours by which they are made, so that Green, Orange, and Purple, must appear so entirely independent of those which produced them, that Yellowness, Redness, and Blueness, must no more be excited by them, than they were before you knew their mechanical origin. The couplets which are to be formed by them, according to the fourth row, produce by simple intersection the *third class of colours*, as they

are set up in the *fifth* row, and are Olive, Brown, and Slate colours. Here we have the *nine rudimental* materials for painting, or colouring, the rest of the work ; the truth and utility of which, depends on your keeping strictly to the colours, both in *tincture* and *depth*, wherever they are nominated—unless where otherwise directed.

The second Subject of Plate I. will only require the nicest observation of the foregoing directions, with regard to each colour, both in *tincture* and *depth*. The same is all that need be said of colouring Figs. 3, 4, and 5.

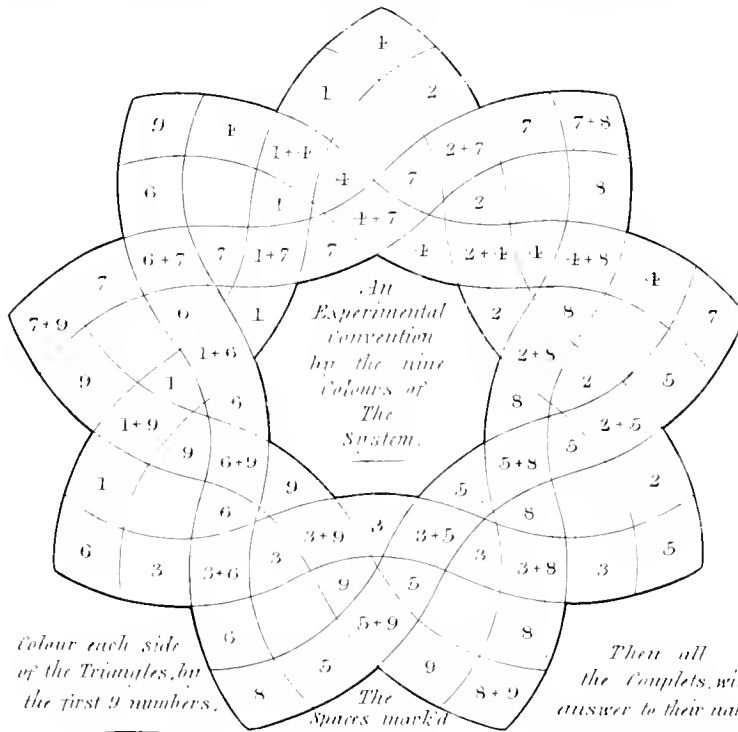
Plate II. The centres of the three Compasses are repetitions of Subject 2. Plate I. and are named *Roots*, from their situations and offices, and must be coloured *exactly* to the originals, as it is from these that the inner spaces of the circles are to be coloured, *and most carefully matched*. Then, as the first Compass contains 18 radial divisions, and the *root* dictates only six of the colours, there will consequently be two radii between each to be coloured by the harmonizing communion of the two colours which such spaces lie between ; as thus, the two spaces between Yellow and Orange must graduate out of one into the other, by just proportions of each, according to their local influence : the same between Orange and Red, and from Red to Purple ; then on to Blue, which will graduate towards and into Green, as the Green must up to the Yellow. This will fill the inner circle scientifically true, and each of the outer circles will be only the one paler than the other by three distinct gradations, from full colour in the inner circle, to pale on the outer circle of each example ; and the best way of proceeding will be to mix all the colours to the palest tint, colouring each whole

ray (all three divisions) at once. Then leave the outer circle, and repeat the colours again on the remaining two radii to the proper depth, when you will only have the inner circle to repeat the same colour on to a *full depth*, which, if well calculated, will finish the Compass. The more care you take in preparing the original colours, the easier will the work be. The second Compass leaves but one clear space between the six colours dictated by its central *root*: those spaces must be coloured by an equal mixture of the two colours which lie on each side of it, so as to make an harmonious association with both. The third Compass having but six radii, the colours are all dictated by its central *root*. Subjects 4 and 5 must be worked according to the directions given for colouring the rainbow, Plate III. pages 23 and 24, and the directions for colouring, Subject 1. Plate III. are given under the proper head.

It was my first intention to illustrate my proposition by six large coloured plates, until I found that the expence would have been inconveniently high for many of those for whose particular instruction it was designed. I have therefore only *reduced the sizes* of the diagrams so as to comprehend the whole work; and that only (materially) in the Compasses, by giving three circular gradations instead of five; but I would advise the *practising* student to *express* the gradations from colour to light by many more circular degrees, increasing the number of radii at pleasure, and on as large a scale as possible, according to the system which I trust is clearly explained.

ADDENDA.

The multiplication of Triads by various Intersections may be, not only amusing, but very instructive as the following Contrivance exhibits the three Primitives — and their six Compounds pure, with XXI additional Compounds by couplets.



Colour each side of the Triangles, by the first 9 numbers.

Then all the Couplets, will answer to their names.

1	are	Yellow.	} (Primitive	2 + 5	Red	-	Purple.
2		Red		} (Colours.	2 + 8	Red	-
3		Blue.	} (First		3 + 6	Blue	+
4		Orange.		} (Compound.	3 + 9	Blue	-
5		Purple.	} (Second		5 + 5	Blue	+
6		Green.		} (Compound.	3 + 8	Blue	+
7		Brown.	} (First		4 + 7	Orange	+
8		Slate.		} (Second	6 + 9	Green	+
9		Olive.	} (Compound.		4 + 8	Orange	+
1+2		Yellow.		} (First	5 + 5	Purple	+
1+7		Yellow.	} (Second		5 + 9	Purple	+
1+6		Yellow.		} (Compound.	6 + 7	Green	+
1+9		Yellow	} (First		7 + 8	Brown	+
2+7		Red		} (Second	7 + 9	Brown	+
2+4		Red	} (Compound.		8 + 9	Slate	+

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The apparatus is then *done with*, and the Student must proceed to finish the drawing with the same mind and talent that he must have had recourse to, *on a view taken by the eye*. And even the professed Artist might be well rewarded for his condescension, by setting his subject with due taste and great deliberation, so as to determine on the most favourable composition, which, if required, might be transferred to a *life size canvas* (by *reticulation*), with the utmost certainty of true Perspective and general proportion, which is not unfrequently wanting in pictures of all sizes.

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MR. HAYTER presents his most grateful acknowledgments to the Nobility and Gentry, and to his Professional Friends, for the unqualified approbation which has followed his endeavours, in rendering the Art of Perspective practically attainable by

the most simple and easy explanations; inasmuch as to have made one of the *most* intricate branches of the Mathematics an entertaining amusement. He has the honour to announce a re-print of his "EASY INTRODUCTION TO PERSPECTIVE, DRAWING, AND PAINTING," *Fourth Edition*, Octavo; (dedicated with approbation to Sir Thomas Lawrence, Principal Painter to the King, President of the Royal Academy, &c. &c.) with very considerable (*and final*) additions; having given a *Practical Scale* of Sir Isaac Newton's Distribution of Colours in his (in lieu of his *Note* in former editions) and an ORIGINAL DIAGRAM, clearly explaining *how* the THREE PRIMITIVE COLOURS generate all others—being an *ultimate* Answer to that Question.

The many very liberal and disinterested commendations, which the Author has received on the utility of this publication, enables him to say, Such is the scientific basis on which it is founded, that Artists, Mathematicians, and Teachers of the highest celebrity, declare it to be as necessary to the study of Drawing and Painting, as a Grammar is to language; giving it the most sincere of all confirmations, by recommending it to the use of their children and amateur friends. How desirable then must the possession of this volume be to all such as are bound to select and direct the various talents of those who come under their tuition. The juvenile *dramatis personæ* of the dialogues, with the clearness and simplicity of the diagrams, unite most successfully in explaining the whole, without the accustomed gravity and technical tiresomeness, usual in works of this sort.

The "LETTERS ON DRAWING and PAINTING," which follow the "ESSAY ON PERSPECTIVE," are equally explicit; familiarising the rudimental requisites of the art by the best principles, in as entertaining a style as science would admit; and is so carefully adapted for the instruction of FEMALES, as to have obtained him the honour of the above-mentioned appointment. And while it is thus recommended as a guide to YOUTHFUL genius, it may fairly be observed, that such is still the unelementary state of the many, that there are few (very few) professional practitioners who would not study this work to great advantage. There is not so complete an instructor in so compendious a form, for Gentlemen of the Navy and Army, who are now expected to acquire a competent knowledge of Drawing, as an indispensable part of their honourable profession; and it is offered to Schools in general, on a footing with the best rudimental books, as a Guide to the Drawing Classes.

Printed for Messrs. KINGSBURY, PARBURY, and ALLEN, No. 7, *Leadenhall Street*, in 1 Volume Octavo, Price 12s. boards; and to be had of the Author, No. 16, *Buckingham Street, Portland Road*.

Note—The great additions made to the above work, both in plates and letter-press, and especially in this last edition, has nearly doubled the size of it, when compared with the first publication, although the additional price is only 1s. 6d.

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